

NATURAL RESOURCES CONSERVATION SERVICE

VIRGINIA CONSERVATION PRACTICE STANDARD

SEDIMENT BASIN

(No.)

Code 350

DEFINITION

A basin constructed to collect and store debris or sediment.

PURPOSES

A sediment basin may be established to:

- Preserve the capacity of reservoirs, ditches, diversions, waterways and streams
- Prevent undesirable deposition on bottom lands and developed areas
- Trap sediment from construction sites
- Reduce or abate pollution by providing a place for deposition and storage of sediment, agricultural wastes and other detritus

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to sites where:

1. Physical conditions or land ownership preclude treatment of a sediment source by installation of erosion control measures to keep soil and other material in place.
2. There is sufficient space and soils and topography are suitable for the construction of an impoundment.

CRITERIA

Sediment basins may be planned for either wet or dry storage of accumulated sediment, and may be temporary or permanent structures. Basins designed to function dry shall be equipped with perforated risers, where collected runoff water shall pass through a gravel filter installed around the riser. Perforations and gravel filter sizes should be designed to function together, passing storm flows of less intensity and duration than the design storm. The principal spillway shall be designed considering inflow, retention time and filters required to provide maximum trap efficiency of the basin.

The design of dams, spillways and drainage facilities shall be according to NRCS Virginia Conservation Practice Standards *Pond (Code 378)*, *Grade Stabilization Structure (Code 410)* or according to the requirements in Technical Release No. 60, Earth Dams and Reservoirs, as appropriate for the class and kind of structure being considered.

Temporary basins having drainage areas of 5 acres or less and a total embankment height of 5 feet or less may be designed with less conservative criteria if conditions warrant. The embankment shall have a minimum top width of 4 feet and side slopes of 2 horizontal to 1 vertical or flatter. An outlet shall be provided of earth, pipe, stone or other devices adequate to keep the sediment in the trap and to handle the 10-year frequency, 24-hour duration storm without failure or significant erosion.

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.

The storage capacity of the sediment basin shall equal the volume of sediment expected to be trapped at the site during the planned useful life of the basin or the improvement it is designed to protect. The design sediment yield to the basin shall be at least that required by the applicable local, state and federal law, rule or regulation. Where no laws, rules or regulations apply, determine the sediment storage volume by using the Revised Universal Soil Loss Equation and gully erosion rates with an appropriate delivery ratio or by using other accepted sediment predictive procedures. Where it is determined that periodic removal of debris will be practicable, the capacity may be proportionally reduced. If not specified by law, rule or regulation, sufficient capacity to store 0.25 acre-inches for each disturbed contributing acre should be provided.

When sediment basins are used to control sediment from land-disturbing activities, they must meet the requirements set forth in the Virginia Erosion and Sediment Control Handbook.

Provisions shall be made for draining sediment pools if necessary for safety and vector control. Fencing and other safety measures shall be installed as necessary to protect the public from floodwater and soft sediment. Due consideration shall be given to visual resource management.

Disturbed areas shall be established to suitable erosion-resistant vegetation as soon as practical after construction. Seedbed preparation, fertilizing, seeding and mulching shall be in accordance with Virginia Conservation Practice Standards *Critical Area Planting (Code 342)* and *Mulching (Code 484)*. Where it is necessary, topsoil may be stockpiled and spread over disturbed areas to facilitate restoration of productivity.

CONSIDERATIONS

Effects on water budget, downstream flows, aquifers and wetlands must be considered.

This practice can be used to develop seasonally ponded areas for migratory waterfowl. Where possible, the design should enhance habitat for native and endangered species. Effects on downstream water quality and temperature may be critical for some species.

This practice may adversely affect cultural resources. Planning, installation and maintenance must comply with General Manual 420, Part 401.

PLANS AND SPECIFICATIONS

Plans and specifications for installing sediment basins shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

Plans and specifications shall be prepared to show site specifics. The drawings and specifications shall show location, cross sections of excavations and embankments, applicable piping and spillway details, applicable erosion controls for outlets and applicable seeding requirements.

Construction of sediment basins within the scope of the Virginia Conservation Practice Standard *Pond (Code 378)* shall have, as a minimum, specifications commensurate with those for *Pond (Code 378)*. Those within the scope of TR-60 shall be in accord with the specifications contained in National Engineering Handbook, Section 20.

OPERATION AND MAINTENANCE

A site specific Operation and Maintenance Plan must be prepared and reviewed with the landowner or operator. This plan shall contain guidance to inspect and maintain the design capacity, embankment, gravel filters, vegetative cover and outlet.

Temporary sediment basins for erosion and sediment control must have a defined design life, and schedule for maintaining capacity throughout the life of the structure. The operation and maintenance plan should address closure of the structure after its design life.

All plans shall include a provision that after each large storm, basins must be inspected and needed maintenance performed. When sediment storage is full, accumulated sediment must be removed or the basin must be redesigned and modified to restore capacity.

REFERENCES

1. NRCS Technical Release No. 60, Earth Dams and Reservoirs.
2. Virginia Erosion and Sediment Control Handbook.
3. NRCS, General Manual, 420, Part 401.
4. NRCS National Engineering Handbook, Section 20.
5. NRCS, Virginia Field Office Technical Guide.

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SEDIMENT BASIN

Approved Practice Narratives

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350 D1 Sediment Basin: A wet sediment basin shall be installed to detain sediment-laden runoff long enough for the sediment to settle out to minimize sedimentation downstream.

350 D2 Sediment Basin: A dry sediment basin shall be installed to detain sediment laden runoff long enough for the sediment to settle out to minimize sedimentation downstream.

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